

What Is Claimed Is:

1 1. A method for optimizing traffic on a distributed content delivery
2 network, comprising:
3 receiving a request for content from a client at a directory server;
4 determining if the client is a member of an arena in a list of arenas,
5 wherein an arena is a specified set of nodes on a network; and
6 if the client is a member of the arena, applying routing rules to the delivery
7 of content to the client, including routing rules specific to the arena.

1 2. The method of claim 1, further comprising defining an arena by
2 receiving input from a user and using the input to specify one or more edge
3 routers that surround nodes on the network that are members of the arena.

1 3. The method of claim 1, wherein after an arena is defined, a node
2 can be dynamically assigned to and removed from the arena as the node is
3 physically moved.

1 4. The method of claim 1, further comprising defining an arena by
2 receiving input from an administrator and using the input to specify a list of
3 addresses for nodes that comprise the arena.

1 5. The method of claim 1, wherein a routing rule can prohibit traffic
2 across a specific network link.

1 6. The method of claim 1, wherein a routing rule can prohibit traffic
2 across a specific network link when the network link reaches a predetermined
3 utilization.

1 7. The method of claim 1, wherein the routing rule specifies a
2 maximum amount of bandwidth that can be used for content delivery purposes on
3 a specific network link.

1 8. The method of claim 1, wherein applying routing rules to the
2 delivery of content to the client involves:
3 attempting to receive content at the client from nodes on a local subnet;
4 if no nodes are available on the local subnet, attempting to receive the
5 content from nodes in a local arena;
6 if no nodes are available on the local arena, attempting to receive the
7 content from nodes in non-local arenas as specified by a fallback list;
8 if no nodes are available on non-local arenas, attempting to receive the
9 content from nodes that are topologically close on a router graph, wherein the
10 router graph specifies how the nodes on the network are interconnected; and
11 if no nodes are available on the router graph, attempting to receive the
12 content from an origin server.

1 9. The method of claim 8, wherein the fallback list for arenas
2 specifies an ordering of arenas.

1 10. A computer-readable storage medium storing instructions that
2 when executed by a computer cause the computer to perform a method for
3 optimizing traffic on a distributed content delivery network, the method
4 comprising:
5 receiving a request for content from a client at a directory server;
6 determining if the client is a member of an arena in a list of arenas,
7 wherein an arena is a specified set of nodes on a network; and
8 if the client is a member of the arena, applying routing rules to the delivery
9 of content to the client, including routing rules specific to the arena.

1 11. The computer-readable storage medium of claim 10, wherein the
2 method further comprises defining an arena by receiving input from a user and
3 using the input to specify one or more edge routers that surround nodes on the
4 network that are members of the arena.

1 12. The computer-readable storage medium of claim 10, wherein after
2 an arena is defined, a node can be dynamically assigned to and removed from the
3 arena as the node is physically moved.

1 13. The computer-readable storage medium of claim 10, wherein the
2 method further comprises defining an arena by receiving input from an
3 administrator and using the input to specify a list of addresses for nodes that
4 comprise the arena.

- 1 14. The computer-readable storage medium of claim 10, wherein a
2 routing rule can prohibit traffic across a specific network link.
- 1 15. The computer-readable storage medium of claim 14, wherein a
2 routing rule can prohibit traffic across a specific network link when the network
3 link reaches a predetermined utilization.
- 1 16. The computer-readable storage medium of claim 10, wherein the
2 routing rule specifies a maximum amount of bandwidth that can be used for
3 content delivery purposes on a specific network link.
- 1 17. The computer-readable storage medium of claim 10, wherein
2 applying routing rules to the delivery of content to the client involves:
3 attempting to receive content at the client from nodes on a local subnet;
4 if no nodes are available on the local subnet, attempting to receive the
5 content from nodes in a local arena;
6 if no nodes are available on the local arena, attempting to receive the
7 content from nodes in non-local arenas as specified by a fallback list;
8 if no nodes are available on non-local arenas, attempting to receive the
9 content from nodes that are topologically close on a router graph, wherein the
10 router graph specifies how the nodes on the network are interconnected; and
11 if no nodes are available on the router graph, attempting to receive the
12 content from an origin server.
- 1 18. The computer-readable storage medium of claim 17, wherein the
2 fallback list for arenas specifies an ordering of arenas.

1 19. An apparatus for optimizing traffic on a distributed content
2 delivery network, comprising:
3 a receiving mechanism configured to receive a request for content from a
4 client at a directory server;
5 a determination mechanism configured to determine if the client is a
6 member of an arena in a list of arenas, wherein an arena is a specified set of nodes
7 on a network; and
8 a routing mechanism configured to apply routing rules to the delivery of
9 content to the client, including routing rules specific to the arena, if the client is a
10 member of the arena.

1 20. The apparatus of claim 19, further comprising a definition
2 mechanism configured to define an arena by receiving input from a user and using
3 the input to specify one or more edge routers that surround nodes on the network
4 that are members of the arena.

1 22. The apparatus of claim 19, wherein after an arena is defined, a
2 node can be dynamically assigned to and removed from the arena as the node is
3 physically moved.

1 23. The apparatus of claim 19, further comprising a definition
2 mechanism configured to define an arena by receiving input from an administrator
3 and using the input to specify a list of addresses for nodes that comprise the arena.

1 24. The apparatus of claim 19, wherein a routing rule can prohibit
2 traffic across a specific network link.

1 25. The apparatus of claim 24, wherein a routing rule can prohibit
2 traffic across a specific network link when the network link reaches a
3 predetermined utilization.

1 26. The apparatus of claim 19, wherein the routing rule specifies a
2 maximum amount of bandwidth that can be used for content delivery purposes on
3 a specific network link.

1 27. The apparatus of claim 19, wherein the routing mechanism is
2 further configured to:
3 attempt to receive content at the client from nodes on a local subnet;
4 attempt to receive the content from nodes in a local arena if no nodes are
5 available on the local subnet;
6 attempt to receive the content from nodes in non-local arenas as specified
7 by a fallback list if no nodes are available on the local arena;
8 attempt to receive the content from nodes that are topologically close on a
9 router graph if no nodes are available on non-local arenas, wherein the router
10 graph specifies how the nodes on the network are interconnected; and
11 attempt to receive the content from an origin server if no nodes are
12 available on the router graph.

1 28. The apparatus of claim 27, wherein the fallback list for arenas
2 specifies an ordering of arenas.